May 1970

SAFETY DIGEST

AMCP 385-95

DA AUTHORIZES NEW INSIGNIA FOR AMC

■ A distinctive new insignia has been authorized for wear by the military personnel of Army Materiel Command. (See Cover)

Designed to be worn on the epaulets of the uniform, the new official insignia is not intended to replace the AMC shoulder sleeve insignia.

The New insignia, which is being procured by the Army and Air Force Exchange Service, will be available for initial issue and purchase by midsummer of this year.

Officers and warrant officers will be able to purchase a set of two insignia for about $1.15. AMC enlisted personnel will be issued one set each through their respective units.

The insignia, which was designed by the Army Institute of Heraldry at Cameron Station, Alexandria, Virginia, is a gold color metal and enamel device consisting of a globe with quarterly scarlet and ultramarine blue and gold grid lines and an outline in front of and extending below a white enamel truncated pyramid. AMC's motto "ARSENAL FOR THE BRAVE" is inscribed in black letters below the horizontal axis of the globe.

AMC Officially adopted "ARSENAL FOR THE BRAVE" as its motto August 1, 1968 after reviewing 16,302 motto suggestions from a command-wide contest.

The design was suggested by the authorized shoulder sleeve insignia and mission of the AMC. The white crenelated design at the top of the insignia refers to command and control. The four merlons, which simulate the cogs in a gear wheel, refer indirectly to the four major functions of the command's mission.

The pyramid, a symbol of strength and support, is not completed to indicate the continuing research, development, production, procurement, storage, transportation and distribution.

The white areas taken together simulate the letter "M" (materiel) and the globe indicates the worldwide scope of the command's responsibility in providing technical and professional guidance and assistance for planning and conducting logistic services of the Army elements of unified and specified commands and other US and foreign customers. The color scarlet refers to the military and the color blue refers to industry.

HEADQUARTERS
UNITED STATES ARMY MATERIEL COMMAND
WASHINGTON, D.C. 20315

AMC PAMPHLET Number 385-95 MAY 1970

The Safety Digest is an AMC Pamphlet prepared by the Safety Office Headquarters, U. S. Army Materiel Command. Its purpose is to disseminate information which can materially influence and improve safety programs at all Command establishments.

Articles are included to supplement technical knowledge as well as practical knowledge gained through experience. They provide a basis for the further refinement of safety measures already incorporated in operating procedures and process layout. To achieve maximum effectiveness, the Safety Digest should be given widespread circulation at each AMC establishment.

Articles appearing in the Safety Digest are unclassified and are not copyrighted. They may be reproduced as desired in order to bring pertinent accident prevention information to the attention of all employees. The Army Materiel Command Safety Digest should be given a credit line when articles are extracted.

Unclassified material believed to be of interest or benefit to other establishments is welcome for publication in the Safety Digest. Please send articles for review to: U. S. Army Materiel Command Field Safety Agency, Charlestown, Indiana. If possible, include pictures, charts, drawings, and illustrations that clarify and heighten interest in your presentation.

AMCSF

FOR THE COMMANDER:

OFFICIAL:

LEO B. JONES
Major General, USA
Chief of Staff

P. R. HORNE
Colonel, GS
Chief, Administrative Office

Special Distribution 1

IN THIS ISSUE

COMMANDING GENERAL, US ARMY MATERIEL COMMAND PRESENTS FY 1969 AMC SAFETY AWARDS

During a recent Commanders Conference, General Chesarek presented the AMC FY 1969 safety awards to the Major Subordinate Commands.

General Chesarek is shown presenting the AMC Award of Honor to MG Lotz, Commanding General, US Army Electronics Command for the best safety program of the Major Subordinate Commands during FY 1969.

MG Lollis, Commanding General, US Army Tank-Automotive Command is shown receiving the AMC Award of Merit for Safety from General Chesarek.

MG Rasmussen, Commanding General, US Army Weapons Command receives the AMC Award of Merit for Safety from General Chesarek.

ECOM PROCUREMENT AND PRODUCTION DIRECTORATE WINS SECOND AWARD OF HONOR

The Procurement and Production Directorate of the US Army Electronics Command won the AMC Award of Honor for FY 1969. This was the second successive year it was picked for the top AMC safety award. In the photo above Mr. Leo Kapust, Acting Director of the organization is shown receiving the award plaque from Major General Walter E. Lotz, Jr., Commanding General, US Army Electronics Command.

****

CLEVELAND ARMY TANK-AUTOMOTIVE PLANT WINS AMC AWARD OF HONOR

The Cleveland Army Tank-Automotive Plant safety program for FY 1969 made it a first time winner of the AMC Award of Honor for Safety. In the photo above E. D. Solms (center), Plant Manager, is shown accepting the award plaque from Major General Henry A. Rasmussen, Commanding General, US Army Weapons Command. Present at the ceremony was James E. Knott (right), Manager of Plant Operations, Allison Division, General Motors.

In presenting the award General Rasmussen paid tribute to the safety program conducted under the leadership of safety director, Robert Newport. Mr. Newport is not shown in the picture.

SAFETY IN THE SEVENTIES

Safety Office, Aberdeen Proving Ground

(The following material was prepared for the last Aberdeen Proving Ground Safety Council meeting of 1969. Mr. Walter Kohout, APG Safety Director, made it available for publication in the Safety Digest.)

Since this is the last Safety Council meeting of the 60's, it seems to be a proper time to discuss the the directions the safety program may take in the 70's. You are all aware that we live in a time of rapidly changing conditions. In fact, one of our current problems is that information distribution and retrieval systems cannot keep up with the volume of new knowledge and data that is being developed. This period of history is being referred to by writers as the Atomic Age, the Space Age and the Age of Technology. In addition to our changing technology, the affluence and education of the general population and the work force is rapidly increasing. Our safety program must move forward if it is to keep pace with other segments of our activities.

Today many organizations with established safety programs find they are working very hard just to maintain their safety record. Accident rates seem to have reached a level where further reduction by traditional means is not possible. New methods measuring criteria and new emphasis must be found.

In the field of safety education and training of our personnel there is room for much progress. Safety personnel require higher levels of education and more specialized training to understand and control today's complex hazards. The institutions of higher learning can develop courses to prepare people for jobs as safety administrators, safety engineers, industrial hygienists, and environmental specialists. On the other side of the coin personnel preparing for other positions in science, engineering and business administration should be given some safety training. The majority of current undergraduate programs leading to a bachelor of science degree contain no safety courses.

The systems safety program of "Safety from Conception to Disposal" will pick up momentum in the 70's. The costs of modifying complex equipment after design errors are discovered by the user can no longer be tolerated. Industry has been put on notice by a rash of product liability suits that the cost of allowing

unsafe items to reach the consumer is higher than designing a safe product.

The gains already made by organized safety workers are now safer on the job than off the job. With the affluence of the worker, the off-the-job safety problem will become much more critical. The individual can now afford power tools for his special projects and power mowers to lighten his work. He can afford boats, snowmobiles, trail bikes and campers to help him enjoy his leisure time. More holidays will soon be calendared for weekends. The problems of highway safety also add to the off-the-job safety problem.

Much greater emphasis can be expected on this problem in the future. Although the employer has no responsibility for the individual's off-the-job safety, the loss of key employees by accident causes serious results and produces increased indirect costs. Military personnel are an exception as they already receive extensive off-duty safety emphasis. This is because the Government is responsible for their off-duty safety.

From the items mentioned, it is obvious that the safety program will be faced with great problems in the 70's. Industry and Government are preparing now to meet these changes. The United States Congress is working on regulations to improve safety and reduce environmental pollution. Scholarship and incentive programs are being more liberally offered to help reduce the shortage of industrial hygienists and safety engineers. For five years, the Army Materiel Command has been training qualified college graduates under the Safety Career Management Intern Training Program. The AMC Safety Agency is providing more varied one and two-week training courses in many areas of safety. Intensive short courses covering specialized safety problems like lasers, radiation and system safety are being presented to professional safety personnel by various colleges and universities. The Army Environmental Hygiene Agency, the National Safety Council, and the U.S. Department of Health, Education, and Welfare offer special training courses. Federal grants are being given for research in industrial and environmental health.

The safety developments of the 60's have been described by many writers as revolutionary. In the 70's we expect that the general trend will be toward drawing together the various programs designed to protect the population. This will result in a more coordinated effort to provide total protection to all personnel. In the final analysis, the first line supervisor on the job as well as the individual will still be the person most responsible for safety.

CHAIRWOMAN ENLIVENS COMMITTEE MEETING

Frank P. Velotta, Safety Officer
Frankford Arsenal

One of the most important factors in an effective safety training program is a plant safety committee that has a healthy attitude toward safety. These committees are usually headed by key supervisory personnel who appoint qualified subordinates to serve as committee members. Each may serve as chairman to conduct safety meetings and other training, as appropriate, on a rotational basis. Under the guidance of the Safety Director, the committee becomes an integral part of the plant safety program.

The success and effectiveness of the safety presentations depend greatly on the receptive attitude of participating employees. This can be developed through motivation. In order to hold employee interest, unique methods of presentation may be utilized to stir incentive and enthusiasm. Stereotype presentations should be avoided. These tend to become dull, drab and ineffective. Creative thinking should be encouraged and employed to produce novel and unique ideas to improve participation and stimulation of safety thinking.

Recently, one such example of a unique idea was demonstrated at Frankford Arsenal by a female employee. She had been appointed to prepare an agenda for a safety meeting for her organization and to act as chairman. The challenge of this appointment motivated her to be creative - to do something different - to be effective and hold interest by getting her message across.

As part of her program, her first step was to gather safety literature and data. From these, she devised a safety quiz with a variety of true-false, and multiple choice questions. The questions pertained to on-and off-the-job safety. She then had enough copies made for distribution of one to each participating employee.

After this phase was completed, she thought further. Her creative thinking did not stop at the end of the workday. She brought her assignment home with her. Another part of her plan was to bake cookies the night before the meeting. These were to be part of her safety presentation.

On the back of a number of cookies she inscribed with vegetable dye a skull with cross bones, and the word "poison". Her plan was to test her audience by observing how many would recognize the "poison" marked cookies before eating them, and their comments, if any. At the start of her meeting, she distributed the cookies. This put her audience, which was mostly male, in a receptive mood. They ate the cookies and enjoyed them, complimenting the chairman.

After the written quiz session, each employee checked his own paper for his score. After a lively discussion, the chairman asked her audience how they enjoyed the cookies, and if any noted the inscription. There was a bewildered group wondering what she meant. Looking at her watch, she stated that a certain number should be "dead" by now, explaining her scheme and proving her point.

The presentations were well received, and the chairman was complimented by all for her unique presentation.

Safety hats off to Miss Mary M. Magda, Chairman!

****

Allan A. Samson, Safety Inspector
Harvey Aluminum Sales, Inc.
Milan Army Ammunition Plant

(At the Milan Army Ammunition Plant each issue of the plant newspaper, The News MAAP, contains stories in which Safety Office personnel explain the "Why" of their activities. Mr. Samson's article is written in the style that has been found successful in conveying the safety message to the paper's readers.)

This article is not about Safety, but rather what Safety is all about!

If this confuses you, let me explain the statement. The function of Safety is not to find the cause of an accident after it happens; it is to search out the accident source and eliminate it before the accident can happen. This can be illustrated by comparing the way a Safety Department functions with the system of practice of an ancient Chinese doctor of medicine. The doctor was paid a monthly fee by his patients only for as long as they stayed well. When a patient became ill, payment

was stopped, and it was not resumed until he had regained his health. Therefore, the doctor devoted all of his effort toward the prevention of illness, not its cure.

You may wonder just what we Safety Inspectors do except walk around and look mysterious, occasionally writing something down on the pads that we invariably have in our hands. Like the Chinese doctor, we are trying to search out those conditions that might cause an accident and have them corrected before the accident does occur. We watch the actual performance of an operation and then analyze it to see if there is a better and safer way it can be done. We check the safeguards on machinery, insuring that they give the operator and adjacent operators the maximum amount of protection possible. Potential fire hazards are closely watched and either minimized or eliminated. Protective equipment such as face masks, eye shields and goggles receive close attention to insure they afford adequate protection and are used where required. Explosives and munitions stored on the line and present at work stations are checked constantly to see that the amounts present are kept within the minimums necessary for both production requirements and safe-distance limitations. In brief, we are trying to prevent before we have to take on the less pleasant job of attempting to cure.

The inspections listed above are only a portion of the duties of the Line Safety Inspector. These will better inform you as to why there is a Safety Department and what its members are doing to protect you. If we can send you home at the end of your workday with the same number of body parts with which you arrived (such as ten fingers and toes, two eyes, two legs and two arms) and with all of them undamaged, we can depart ourselves knowing that we have done the job for which we were paid. You and I will have achieved "WHAT SAFETY IS ALL ABOUT."

AIR BREAKS FOR THE 'SECOND COLLISION'

On July 1 the Department of Transportation took the first step toward requiring auto manufacturers to equip new cars with occupant protection systems commonly called air bags, or similar restraint systems to protect drivers and passengers in the event of a collision.

Known officially as an "advance notice of proposed rule making," the announcement invites comments from the manufacturers and other interested parties on the question of whether air bags should or should not be installed on all new cars soon - that is, in the 1971 or 1972 models.

Many engineers and government officials feel that the eventual adoption of the air bag as a standard safety item is a virtual certainty, particularly since certain obstacles to their practical use have recently been overcome. Cost, it now appears, also will not be a major stumbling block.

What exactly is this air bag, the innovation that some enthusiasts have called the most important automotive safety device ever developed? Basically, it's a large inflatable pillow about three times as deep as the one you sleep on at night. When not inflated it will be kept tightly folded in a small box under the right side of the dashboard, on the back of the front seat or installed in the hub of the steering wheel. When it is in place in your car of the future you will never see it unless the car is involved in a collision.

The most advanced model has been produced by Eaton, Yale & Towne, Inc., Southfield, Michigan. In this model the air bag is made of urethane-coated nylon. In addition to the bag, each complete unit consists of a metal bottle of nitrogen compressed to 3,500 pounds per square inch sealed by a cap containing a detonator, a diffuser tube that distributes the nitrogen gas evenly into the bag after detonation of the cap, and a sensing device that actuates the detonator.

All items except the sensor are packaged together; the sensor is mounted on the firewall of the car, the metal sheet that separates engine from passenger compartment.

Here's how the present design operates: If an air-bag-equipped car collides with another object with force equivalent to striking a concrete barrier at 8 mph or

faster, a momentum-tripped electric switch in the sensor sends a current to the detonator, which blows the cap off the nitrogen bottle. In a very small fraction of a second the nitrogen blasts out of the bottle, through the distributor tube and into the bag. This inflates the bag fully but only for a split second. It is, however, at the instant of fullest inflation that the driver and passengers are beginning to move forward to their dramatic "second collision" - the impact with steering wheel, dashboard, windshield or other interior surface that causes most serious injuries.

But the presence of the bags interrupts the movement leading to the body-smashing second collision - the bags make one or several lifesaving catches, nestling the potential victims momentarily until the entire front-end crash sequence is completed.

Then the bags immediately deflate - through 4-inch holes in their sides - so as not to interfere with road visibility or rapid exit from the vehicle if this should be necessary due to fire or other resulting hazard.

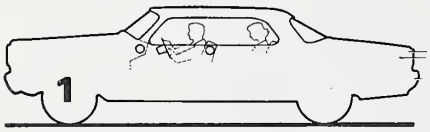
It is important to understand that all the action described above - from the beginning of the crash to full inflation of the bags to complete deflation of them -- takes place in one half of a second or less. Thus, those protected by the bags might not even be aware of their life-saving presence during the critical moment of the collision. That moment, caught by a fast-action camera in our lead picture, is being experienced by a live woman and a child-size dummy in an experiment conducted by Eaton, Yale & Towne in their test laboratory. (See below)

Note that each bag forms a large cushion for the person to fall against. In the blink of an eye following the full-inflation moment, the bags deflate - partly from the pressure of the bodies against them - and virtually disappear from the straight-ahead view of the driver and passengers.

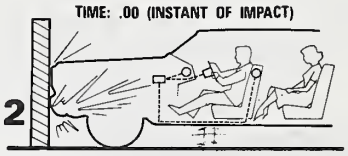
The present design of the air bags falls short of two major objectives in the cushioning of auto occupants during a crash: it does not prevent occupants from being ejected as safety belts do and it does not protect against the effects of a side collision as well as the lap belt-shoulder harness combination.

So for the time being no experts are willing to guarantee that air bags will replace belts and harnesses. However, air bags are being specially developed for operation in side collisions, and new door bolts are in the works that are said to be able, when perfected, to absolutely prevent door openings during auto crashes. The speculation is that when these two breakthroughs take place air bags will replace belts without a significant increase in price.

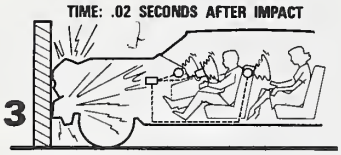
The illustrations show in small fractions of one second what happens to the air bags and auto occupants in the short moment immediately following a collision.



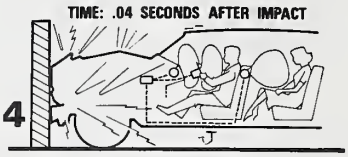
NORMAL CAR OPERATION: Pillows are stowed in steering wheel hub, panel and seat backs.



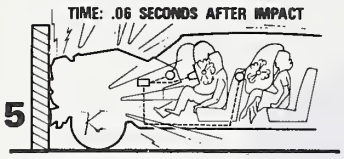
MOMENT OF IMPACT: Front of vehicle stops but passenger compartment only begins to stop.



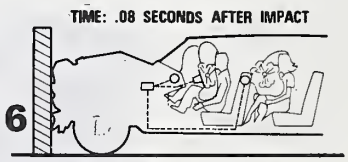
PILLOWS BEGIN TO INFLATE: Sensor has signaled air supplies, air bags start opening.



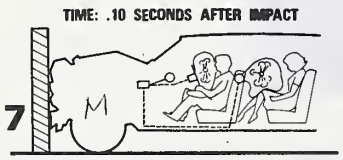
PILLOWS FULLY INFLATED: Before passengers begin to move forward, pillows catch them.



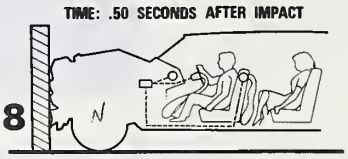
ENERGY DISSIPATION: Occupants pitch forward, pillows support them and absorb their weight.



FORWARD MOTION STOPPED: Passenger compartment is stopped, occupants rest against pillows.



MOMENTUM REVERSES: Residuel energy in pillows gently pushes occupants back into seats.



PILLOWS DEFLATED: In one-half second following crash, air bags are completely out of the way.

Reprint from FAMILY SAFETY, Fall 1969.

SAFETY IN YOUR GLOVE COMPARTMENT

■ The Owners Manual provided by the manufacturer of your car is a familiarization course designed to make you a better and happier driver of that car. There are valuable suggestions on every page, and you'll profit greatly - in your own safety, the protection of your passengers and the well-being of the other drivers and auto occupants you share the streets with - if you'll take the time to read your owners manual carefully and be sure you understand its many important hints, some quite new to the motoring public.

Here are highlights gleaned from the owners manuals published by General Motors, Ford, Chrysler and American Motors.. While not all paragraphs apply directly to you and your own car, and some of the language has been changed to point up the safety reasons for the instructions, most of the recommendations will increase your safety and driving pleasure while keeping maintenance costs at a minimum and securing the full coverage of your car's warranty.

BELTS. The driver's safety belt should be fully unrolled, worn low around the hips and drawn up snugly.

The use of a shoulder harness is not recommended for a person under 4 feet, 7 inches in height because the belt would increase the danger of neck injury in a collision.

Never use a safety belt for more than one person at a time.

When not in use, shoulder belts should be secured in the special storage convenience provided. This is to reduce the danger of the metal end striking an occupant in a sudden stop.

EXHAUST GASES. Do not drive with the trunk lid open if only the vent windows are open. There is a possibility that carbon monoxide gases may be drawn into the car through the partition behind the rear seat, which is not airtight. Further, rearview vision may be seriously obstructed.

Avoid inhaling exhaust gases, especially in an enclosed area such as a garage. Exhaust gases contain carbon monoxide, a potentially lethal gas, that is especially dangerous becuase it is tasteless, colorless and odorless.

As a precaution against carbon monoxide gases, never drive with the tailgate window open unless other windows

(not just "wing" vents) are also open.

JACKS Before jacking up your car, be sure the jack is properly positioned. Personal injury, damage to the bumper or to the vehicle caused by the car slipping off the jack could result from improper jack positioning. Read the illustrated jacking instructions pasted in the luggage compartment.

Never get beneath a car when it is supported only by a bumper jack. Always use safety stands to support the vehicle if it is necessary to get under the car. A bumper jack is used for emergency service only.

STATION WAGONS When using your station wagon to transport luggage or other cargo, it is recommended that the articles be secured in place. This precaution will prevent such items from becoming projectiles in the event of a sudden stop or collision.

INTERIOR Never reach through the steering wheel to operate controls. A sudden need to turn the wheel or the blocking of the wheel's attempt to center itself after completing a turn can result in an accident if the arm cannot be withdrawn quickly enough.

Keep the glove compartment door securely closed while the vehicle is in motion. In a sudden stop or accident, the open door could severely lacerate a person's head or face.

The shelf between the rear seat and the rear window should not be used for storage, even of lightweight articles. They can become dangerous projectiles during a collision or a sudden stop.

Never attempt to raise or lower a convertible top when the car is in motion. The wind created by the vehicle's motion exerts a tremendous force that can damage the top and quite possibly distract the driver's attention so that he may lose control of the car.

RADIATOR When the engine is at normal operating temperature or above, the internal pressure built-up in the cooling system will blow out scalding fluid and vapor if the radiator cap is suddenly removed. To avoid the danger of personal injury and the loss of coolant, the coolant level should be ckecked only when the engine is cool.

The engine should never be run with the radiator cap missing or with the cap loose. The coolant may boil before the temperature indicator light signals that an

overheating condition exists.

An antifreeze solution stronger than 65 per cent should never be used in the engine's cooling system as the freeze level rises rapidly after this point. In fact, straight antifreeze will freeze at only -8° F.

BATTERY Since normal battery chemical action generates hydrogen gas, which is highly explosive when mixed with air, never expose the battery to a flame, electric sparks or hot ashes from a cigarette.

Avoid getting battery fluid, which is a sulfuric acid solution, on skin, clothing or painted surfaces. Eye protection should be worn while working on the battery.

DIFFERENTIAL With a "slip free" type differential-equipped car, care should be taken to avoid sudden accelerations when both drive wheels are on a slippery surface. This could cause both drive wheels to spin and allow the vehicle to slide sideways on a crowned road or when in a turn.

WINDSHIELD WIPER The electric windshield wiper motor is protected from overloading by a circuit breaker. Should a buildup of snow or ice cause the wiper to be inoperative, turn the wiper switch OFF and remove the snow and ice accumulation. When the wiper motor cools, the circuit breaker will automatically reset and the wipers will become operational again when the switch is turned ON.

Be sure to have the fluid level in the windshield washer reservoir checked regularly, with special attention to keeping the reservoir filled during periods of heavy use. Do not use radiator antifreeze in the reservoir. This will cause paint damage.

In very cold weather do not use your windshield washer unless the windshield has been warmed for some time by the defrosters. The antifreeze agent in the washer solution is not strong enough to prevent immediate liquid freezing when the wipers smear the solution over the cold glass. This will cuase total loss of visibility.

In inclement weather, remove snow and ice from cowl inlet areas. This will improve heater and defroster efficiency and reduce formation of fog and frost on the inside of the windshield during initial operation. Also, clear the windshield, rear window, outside mirrors and side windows prior to moving the vehicle to afford complete operational visibility.

SIGNAL SYSTEMS If the turn indicator on the instrument panel does not flash, remains ON continuously or no flasher sound is heard when signaling a turn, check for a burned-out parking or tail light bulb or a blown fuse. Until the repair is made, be sure to use the accepted hand signals to indicate your driving intentions.

Turn signals automatically cancel after a turn is completed but may stay ON if less than a full turn is executed. The "lane change" feature of your turn signals should be used to declare your intention of changing lanes or making less than a full turn. Move the turn indicator lever in the proper direction, part way to the first stop and hold it there as long as desired. Releasing the lever cancels the signal. In this manner limited movement of the steering wheel does not result in continued flasher action.

WARNING FLASHER In the event your car is disabled or you stop for any reason near the highway, be sure to use the 4-way hazard warning flasher system to warn other drivers that your vehicle presents a traffic hazard. Do everything you possibly can to avoid stopping on the pavement.

The hazard warning flasher system will operate with the ignition in locked position and the key removed, allowing the car to be locked while help is being sought.

Use of the hazard warning flasher system while the vehicle is moving is prohibited in some states.

TIRES If you are considering the purchase of oversize replacement tires, be sure the tire size is recommended by the manufacturer of your car. Use of any other size tires may seriously affect ride, handling, ground clearance, tire-fender clearance and speedometer accuracy.

Correct pressure is extremely important to tire life and vehicle control. Pressure should be checked periodically while the tires are cold, that is, before they are driven more than two miles.

To achieve best all-around vehicle handling ease and performance, fiberglass belted tires, radial ply tires and conventional tires should not be mixed on the same vehicle.

When having a puncture repaired on a tubeless tire, have the service man demount the tire and have the hole both plugged and patched from the inside. A plug is only an emergency repair. The patch will prevent air from separating the cords of the tire carcass and

ruining the tire.

If you are planning a motor trip during which you will drive at sustained high speed, pull a trailer or load the car with maximum weight, be sure to observe the special tire pressures and speed qualifications listed in your owners manual.

BRAKES If either half of your dual brake system fails, the brake warning light will glow when the brakes are applied. If this occurs and you must operate the car with two-wheel brakes, proceed at greatly reduced speed to the nearest service facility for immediate repairs.

The brake warning light is not a substitute for visually checking the fluid level in the brake master cylinder. The brake fluid level should be checked at least every time the vehicle is lubricated; more frequent checking when underhood services are performed is advisable.

Before descending a steep or long grade, reduce speed and shift to a lower gear. Use the brakes sparingly to prevent them from overheating and losing effectiveness.

It is important that you do not drive with your foot resting on the brake pedal when braking is not required. "Riding the brake pedal" will result in abnormally high brake temperatures, loss of braking power, and damage to the brakes.

Driving through deep water may seriously reduce brake effectiveness. Applying the brakes lightly will indicate whether they have been affected. To dry them quickly, step lightly on the brake pedal while maintaining a slow forward speed until brake performance returns to normal. The light brake application with the vehicle in motion will warm the brake linings and dry them.

LIGHTS During vehicle operation in icing and snow conditions, it is recommended that the headlights be turned ON to prevent the headlamp grilles from freezing in the closed position.

Turn on your headlights at early dusk and during bad weather to help other drivers see your car from a distance even though you may still be able to see the roadway adequately.

The brake, charging system, oil and temperature warning bulbs will light when the ignition key is turned ON to indicate that the bulbs and wiring are functioning. The lights should go out as soon as the engine is started. If these lights come ON during vehicle operation, it means trouble in the system idicated.

It is the car owner's responsibility to check all lamps, signal systems and warning lights frequently to be sure they are working properly. Headlamp aim should be tested periodically. It is important that any malfunction be promptly corrected for the car owner's safety as well as the safety of others.

Your owners manual tells you a lot you need to know about your car in order to operate it safely.

At your first opportunity, sit behind the wheel and, with the manual in hand, note the locations of controls and the operating procedures outlined in the book. Train yourself to perform by feel - not fumble - so that when you're moving along in traffic you can more easily concentrate on the complex job of modern driving.

Then, see to it that your other family drivers take, and benefit by, the same post-graduate-driver course you've just given yourself.

Reprint from FAMILY SAFETY, Fall 1969, by Les Ruska

****

Each summer we get many requests for information on food preservation. There are two major concerns in storing food (1) to maintain high quality and (2) to prevent the growth of organisms which can cause illness. These are concerns whether we are talking about storing leftover cooked meat or freezing strawberries.

TEMPERATURE

Microorganisms grow very rapidly at temperatures between 50°F. and 120°F. One way to slow the growth rate is to raise the internal temperature of the food above the 120°F. level or lower it to below the 50°F. mark. If the temperature gets high enough for a long enough period, the microorganisms are killed. In pasteurization, most of the staphylococci and Salmonellae are destroyed. However, the spores of Clostridium botulinum may not be destroyed until the temperature reaches 240°F. It is possible to get this high temperature only through the use of pressure.

Refrigerator temperature (approximately 45°F.) will slow down the growth of microorganisms. Lower temperatures as in freezing stop the growth of microorganisms but will not destroy them. When the food is thawed, the microorganisms will start to grow again.

Clostridium botulinum is not destroyed by freezing but it is unable to produce a toxin at freezing temperatures.

Freezing will slow but not stop the action of enzymes which cause changes in flavor, color and texture. Blanching the food before freezing will stop the enzyme action. MF-410 Food Preservation Temperatures shows these temperatures graphically.

CANNING

There are two methods of processing cans or jars of food: (1) water bath canner and (2) pressure canner. USDA bulletin 8 Home Canning of Fruits and Vegetables discusses these 2 methods in detail.

OVEN CANNING

Processing jars of food in the oven is not recommended. There may be a build up of pressure in the jar which breaks the seal or even, at times, causes the jar to explode. It takes longer for food in the center of the jars to reach the desired temperature so the total processing time is longer. Light fruits may darken before the temperature gets high enough to destroy the enzymes.

FREEZING

Information on freezing fruits and vegetables is included in USDA Bulletin 10, Home Freezing of Fruits and Vegetables. We do need to continue to emphasize blanching of vegetables. Blanching destroys the enzymes responsible for changes in color, flavor, and texture. Note that blanching time is counted from when the vegetable is plunged into the boiling water - not when the water returns to boiling. Generally, we say the smaller the piece, the shorter the blanching time, the food should be dipped into cold water to stop the cooking. Blanching does reduce the number of microorganisms present, but its major purpose is to prevent undesirable changes in color, flavor, and texture. Blanched vegetables are easier to pack into containers than unblanched ones. Enzymes are active in fruits, too, causing them to darken. Blanching fruits to inactivate the enzyme would cause them to have a cooked flavor, so we use other methods. One is to keep air out as the enzyme must have oxygen. We do this when we pack fruits in syrup. Sometimes we put crumpled paper on top of the fruit to be sure it stays under the syrup.

Another method of interfering with enzyme activity is to add ascorbic ascid. It is acted on instead of the fruit. Citric acid may be used alone or with ascorbic acid. It is effective because the enzyme is less active in a more acid medium.

Cooperative Extension Service, Arlington, Virginia

ACCIDENT PREVENTION BEGINS AT HOME

As every safety specialist knows, a man's home may be his castle but it is probably more hazardous than his work place. Statistics published recently by the Public Health Service confirm what they have been saying for years -- like charity accident prevention begins at home. The types of household equipment most frequently involved in home accidents and the approximate number of injuries they are responsible for each year are:

- Home machinery -- electric drills, power saws, and similar tools -- 125,000 injuries.
- Heating devices -- floor furnace grates, space heaters, and so on -- 125,000 injuries.
- Clothes wringers (victims are usually children under five) -- 100,000 injuries.
- Power mowers -- 100,000 injuries.
- Cooking stoves -- 100,000 injuries.
- Skillets -- burns from hot handles or splattering grease -- 80,000 injuries.
- Incinerators -- 50,000 injuries.
- Glass doors -- 40,000 injuries.
- Appliance cords -- 35,000 injuries.
- Sockets, extensions -- 30,000 injuries.
- Pilots, gas burners -- 10,000 injuries
- Sun lamps -- 10,000 injuries.

One significant category was omitted. That is, accidents to children from hazardous toys.

● Two mechanics who had been performing services on an Army bus decided they had completed their work. One worker said he would open the shop door while the second man started the bus and drove it outside.

Instead of opening the door as he had promised, the first worker stopped at the back of the bus to recheck the tension on the alternator belts. The second mechanic was not aware of this and he proceeded to start the vehicle's engine. The first man's right hand was on a belt when the motor started. Before he could release the belt the hand was caught between it and a pulley.

His injuries included a comminuted (shattered) fracture of the proximal (upper) phalanx of the right index finger, with division of extensor tendons and lacerations of the second, third, fourth and fifth fingers. He was expected to be away from work for 30 days.

The injured man committed at least two errors. He failed to inform his work partner of his change in plans. He violated a work procedure which required a toggle switch in the rear engine compartment to be switched from a run to a service position before performing work.

The following actions were taken to prevent similar accidents:

□ 1. Personnel at the installation were briefed on the details of the accident. Emphasis was placed on the fact that safety procedures would be strictly enforced.

□ 2. Coordination of bus repair activities to insure safety was emphasized in a new standing operating procedure. The procedure also required the toggle switch to be placed in the "service" position whenever

the engine compartment door was opened.

☐ 3. A caution plate about use of the toggle switch was installed on the inside of the bus engine compartment doors.

****

EYE DAMAGE TRACED TO BLOW ON HEAD

Two Army employees were carting a quantity of laboratory equipment from one floor of a building to another. Movement between floors was by means of an elevator. To gain entry to the elevator shaft a heavy two-sectioned, vertically operated steel door was operated. One man used his hands to push up the top section and a foot to push down the lower section. He next pushed up a lighter, counter balanced door to the elevator. The men then moved their cart on to the elevator.

As one of the men moved through the open doorway, the overhead elevator door descended. The man received a solid blow on the top of his head. The blow was momentarily painful, but it did not cause a cut, loss of consciousness, or a headache. The accident was seen by a third employee who was walking down the hall near the elevator.

As soon as it was apparent that the blow was not serious, joking comments were made about people who had hard heads. The men went ahead with their work. No written report of the accident was thought to be necessary.

Some time later the man's left eye began to bother him. He consulted his family physician and an ophthalmologist. It was found that a detachment of the retina of the eye had progressed to the point of affecting the man's vision. An operation was performed in an effort to return his vision to normal.

As part of their examination, the doctors tried to determine the cause of the detached retina. The most likely cause was determined to have been the blow received months earlier from the descending elevator door.

A work request was submitted to the installation Post Engineer to examine the elevator door and to consider ways to buffer its impact against the upper stop. A mechanical engineer performed an engineering study

and concluded that changes in counter weights or buffering would not improve the operation. Such changes might create the hazards of causing the door to bounce and perhaps creep downward.

The accident was discussed with the employee. The importance of alertness and of reporting all accidents, including those that appeared to be insignificant, were emphasized.

****

EXPLOSION IN HAND FOLLOWS MISFIRE

A contractor employee was performing a routine acceptance test for M-57E1 detonators. The procedure consisted of preparing an assembly of a detonator, an aluminum sleeve, a plastic holder and a witness block. This assembly was then placed in a die inside a drop test machine. The assembled unit was next rotated from its vertical to a horizontal position, and a firing pin was inserted in the assembly. A drop ball was positioned on a magnet and a guard door to the test box was closed. The assembled unit was then returned to its vertical position, and the drop ball was released. The falling ball would strike, drive the firing pin into the detonator and cause it to explode.

In this instance the detonator did not explode. The plastic holder and the detonator fell from the assembly and came to rest on the bottom of the test box. The firing pin remained imbedded in the detonator.

The installation had standing operating procedures and safety rules to govern the procedures to follow when misfires occurred. These required the use of a body shield and shielded tongs when any attempt was made to handle faulty items. The SOP and safety rules had been well publicized and were posted in the immediate work area.

The worker ignored the rules. He opened the door of the test box, reached inside and picked up the detonator and its imbedded firing pin. The detonator exploded. The man lost the first joints of his right thumb and forefinger.

The following actions were taken to prevent similar accidents:

1. The injured worker was removed from this type of work because of his violation of established safety practices.

2. It was reemphasized to each employee that strict adherence to safety rules, procedures and oral instructions was necessary and important.

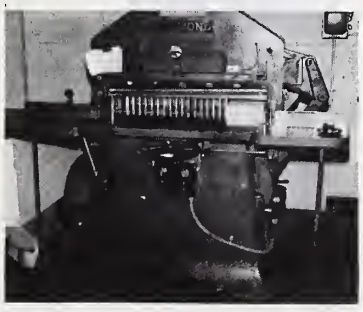
3. Reinstruction and review were provided all employees on SOP's and "Job Safety Responsibility" write-ups to make certain these were understood.

4. In an effort to improve the operation an evaluation was initiated in such areas as safety ideas, procedures, test fixtures, test machines, safety devices, housekeeping practices, and the possible use of automated testing machines.

****

PAPER CUTTER CATCHES FINGER

An Army employee was preparing a ream of paper for cutting on an electric paper cutter. He placed the paper in the machine, as shown the Photo 1. He then started to use a 2X4" block of wood to tamp the sides of the paper to make it even before cutting. His position is shown in posed Photo 2.



While the worker leaned forward to tamp the paper, his foot accidentally came down on the foot control pedal shown at the bottom of Photo 1. This set into operation a clamp that holds paper in place while it is cut. The clamp descended and caught the man's right index finger, which was extended slightly over the edge of the wooden tamping block. The end of the finger was

so badly mangled that amputation of the terminal phalanx was necessary.

The following actions were taken to prevent similar accidents:

1. The foot trip control was modified by cutting it down from 12 inches to about three inches in width.

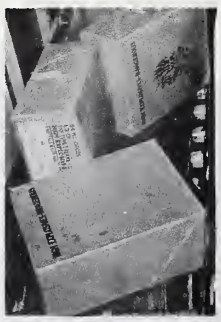
2. A foot guard was installed above the foot trip to provide additional protection against accidental activation.

3. The 2X4" tamping block was replaced by one with a handle in order that the worker's hand would be well away from the paper clamp.

****

CONVEYORS ARE NOT FOR WALKING

A conveyor line was used to move boxed explosives into a building. The procedure was for two contractor employees on the outside to place the boxes on edge on a gravity-operated section. Rollers then moved the boxes into the building, around a curve, and onto a power-operated belt. (See Photo 1).



Sometimes a box would fall over as it moved along the conveyor. This could stop the flow of material, as shown in Photo 2. Any stoppage was freed by a third worker, who was stationed inside the building. A convenient electrical "on and off" switch, near the white marker at right center of Photo 1, permitted him to stop the conveyor, relieve pressure on the jammed box, and straighten the load. He could then turn the switch "on" and the material would be moved down the line.

A day came when the worker tried to free a jam without stopping the belt. He climbed upon the conveyor and used a foot to shove the lodged box. Before he realized what was happening both his feet were caught between the moving belt and the first roller. (See posed Photo 3 at left.) Before his fellow workers could rescue him both feet were pulled well into the one and one-half inch wide space.

The worker's injuries consisted of fractures of the first, second and third metatarsal bones of his right foot and the second metatarsal bone of the left foot. He was expected to be away from work for six weeks.

Investigation revealed that the worker had been employed by the contractor for over six years. He had attended many safety meetings. In the recent one, on the day before his accident, the danger of disregarding lock-out and tagging procedures had been covered.

A plant Safety Department investigator recommended the following corrective actions:

1. Continued efforts should be made by each supervisor to impress upon each employee that working safely was an individual responsibility and that unsafe short cuts would not be tolerated.

2. All employees whose job assignments involved moving machinery or equipment should be reinstructed on mandatory requirements that these items must be locked out or turned off and tagged before performing maintenance, making adjustments or correcting malfunctions.

3. Locking out and tagging procedures should be emphasized frequently during supervisors' safety meetings with employees.

4. Engineers should redesign the conveyor system to prevent boxes of explosives from falling over and causing jams.

Editor's Note: A similar accident occurred at another AMC installation in 1969. A female employee climbed upon a moving conveyor and both of her feet were caught between a roller and belt. Part of the sole of one foot was torn or wrenched away.

AMC CONVEYORS ARE CATCHING THEIR OPERATORS

It is commonly assumed that the person who operates a machine knows he must treat it with a certain amount of care and respect. If there are exposed moving parts it should be obvious to him that these may injure him if he allows himself to be struck or caught by them.

This assumption may need re-examination by Army Materiel Command Commanders, supervisors and safety personnel. Some of their workers are ignoring the hazards of material conveyors, machines that are notable for their visible moving parts. Now these relatively slow-moving machines seem to be bent on devouring some of the people who work with them.

Here are samples of FY 1970 AMC accidents involving workers and conveyors:

● A worker was watching shells go through an inspection station. He placed his left hand on the conveyor roller and links, which were activated once each 23 seconds. A few seconds later the next movement occurred and the man's fingers were caught between the conveyor chain and the frame. The end of the little finger was amputated.

● A female operator was moving across an 18-inch high floor-mounted conveyor. She placed one foot between rollers to step between two loaded skids of ammunition. Before she could step clear, a skid weighing about 900 pounds moved forward and caught her left leg above the ankle. The fibula was fractured.

● A contractor inspector left his station to push 105mm projectiles from a roller conveyor on to a slot conveyor. While his right hand was on one projectile the conveyor moved another projectile against it. His middle finger was badly crushed and part of the end had to be amputated.

● A worker left his post to clear a congested group of shells that had stopped a power-operated conveyor. While returning to his work station he trailed his right hand along the conveyor safety rail. A moving surface caught his glove and pulled first his little finger and then his hand between the belt and a roller. Another worker stopped the machine. The injury was described as "complete avulsion of palmar surface", which may be interpreted to mean that the inner surface of his hand was plucked or torn away.

● A worker attempted to climb over a conveyor at a point where a sheet steel ramp was used to move 155mm forgings across an aisle from a power conveyor line to a gravity feed conveyor. The sheet steel ramp was not secured and it slipped beneath the man. He fell to the floor 32 inches below the conveyor surface, landed on a wooden duckboard and received three fractured ribs.

l A female employee was moving skids of 105mm projectiles from a powered belt conveyor on to an inclined gravity conveyor and thence to a point of pickup by a powered monorail conveyor. One skid lodged at a point where a monorail pusher arm might strike it. The employee tried to reach a monorail conveyor stop switch. While doing this she stepped on the end of the powered conveyor belt. Her left foot slipped between the end of the belt and the first roller of the gravity conveyor. Her foot and leg then moved between the free moving roller and the powered belt's roller. Her leg was badly bruised and some of the surface was torn away.

More accidents involving conveyors could be described, but most would be additional examples of hands and feet being caught or of workers slipping or being caught while climbing upon or across moving conveyors. One repairman had his hand inside a conveyor mechanism when another mechanic operated a power switch. Another worker fell from several feet above and received a fractured skull when he landed on a conveyor.

Accidents involving conveyors resulted in 15 disabling injuries during the first seven months of FY 1970. Thirteen contractor employees and two Army civilian employees were disabled. Six of the injuries were of a permanent nature, in that parts of fingers were amputated. Some of the temporary total disabilities such as bruises, avulsions and fractures were probably more painful and caused more absence from work than the amputation cases.

Only total disability injuries were reported on DA Forms 285. There were probably scores and perhaps hundreds of "little accidents" involving conveyors in which individuals escaped with monor injuries or no injuries whatever.

● Certain unsafe acts seem to prevail in accidents that involve conveyors.

1. Workers attempt to climb across conveyors while these are being operated.

2. Workers step on the surface of conveyors

while trying to cross them, operate controls or reach lodged materials.

3. Workers expose their hands to the edges of moving belts and rollers.

4. Workers expose their hands between items that are being moved by conveyors.

5. Workers attempt to dislodge jammed materials without switching off power or otherwise stopping the movement of materials on conveyors.

6. Workers perform movements or take positions that can result in slips and falls in the vicinity of operating conveyors.

● Measures such as the following can reduce the likelihood of injuries from work associated with conveyors:

1. Provide an adequate number of crossovers, with handrails, to prevent the individual from succumbing to the temptation to climb over the conveyor.

2. Perform engineering alterations to eliminate points that cause cargo to jam on conveyors.

3. Train the workers on the hazards presented by the conveyor's moving surfaces and pinch points.

4. Find ways to load conveyor cargo in positions that will preclude tipping over; i.e., lay it on its side rather than stand it on end.

5. Require workers to cut off motive power or to stop the flow of gravity-moved material before attempting to untangle jammed cargo.

6. Insist on close attention to their work by the individuals working at or near conveyor lines.

7. Observe workers to make certain they do not create a hazard by exposing their hands, feet or clothing to moving parts and cargo.

8. Reinstruct or discipline workers who needlessly expose themselves in postures that could result in injuries.

9. Perform engineering alterations to guard the operators from the pinch points and moving parts, to the greatest practicable extent.

THE PAST IS PROLOGUE IN SAFETY PROGRAMMING

The safety man should not underestimate the significance of the statistical data on the injury experience of the company. The "Past is Prologue" could well be the heading on every chart and table of injury statistics, because past experience, properly applied, is the guide to future safety activities. Injury statistics reflect not only the results of the safety program, but also the effectiveness of the safety organization.

The experience of any one individual, or experience drawn from a limited source, is a poor basis for evaluation of any situation. But mass statistics are a useful tool because they represent the collective experience of many individuals. Statistics are indispensable for the intellectual and methodical conduct of business. They should, therefore, consist of an orderly classification, understandable presentation, and knowledgeable analysis of facts to bring out certain information on a specific problem, and this applies to injury statistics.

Statistics themselves will not prevent accidents, but they will provide a factual base upon which an effective safety program can be built.

Volume statistics capture the interest of management because they signify events which represent a tremendous economic factor. They are comparable to cost-accounting methods in regular use, because they constitute injury accounting. The wise safety man uses such statistics continually to maintain employee interest in safety. He also uses them to point the way to intelligent and effective methods of remedial action in accident and injury prevention. Good accounting of injuries and accidents also serves the safety man in justifying the expenditures encountered in administering the safety program. Wise use of figures will show whether the program is "paying its own fare".

Carefully applied injury statistics will disclose trends toward or away from serious injuries. When injury statistics are analyzed and related to the source of injuries, clues to the kinds of hazards to be controlled, situations which cause personal injury, and protective measures to be taken may be found. The basic objective in recording injuries, then, is to reveal the type and prevalence of accidents that result in injury to employees, and to identify

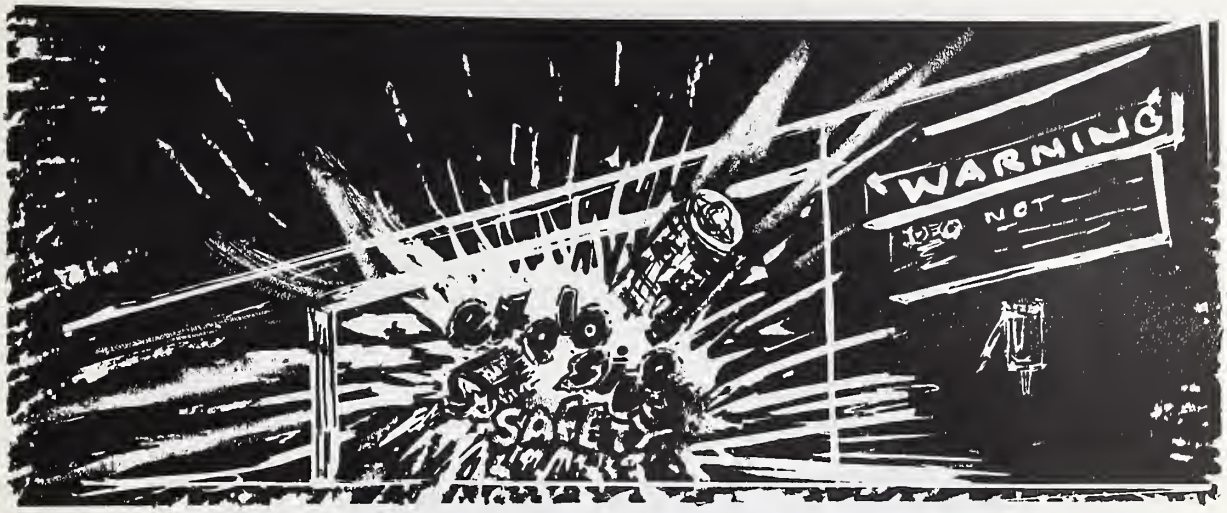
the areas in which corrective action must be taken.

The costs of accidents plainly increase the cost of doing business. A business must make a profit if it is to continue to operate. By a proper evaluation of accident statistics, management can be shown that, rather than being a financial drain on the enterprise, an adequate and efficient safety program affects company profits favorably and actually saves money. A sound safety program is an investment, not an expense.

Injury costs provide ample incentive for management's continuing interest in the safety program. Accidents cost money; preventing accidents saves money. Actually, the money that may be saved by reducing injury rates outweighs the cost of doing it.

It is impossible to have an effective safety program without investing money in it, so safety and dollars must be put in the same sentence wherever there is an opportunity to induce or encourage bigger and better safety programs. Notwithstanding the support that some managements have given to the safety program on humanitarian grounds, their support and enthusiasm have increased when evidence was produced to show that the activity was actually profitable.

U. S. Department of Labor (Using Injury Statistics)



EXPLOSIVES SAFETY IN A CHANGING WORLD

Within our lifetime many changes have taken place in fields of weapons, missiles, explosives and propellants. It is inconceivable that developments in these systems will not continue through the 70's at a rapid pace. Without becoming too involved, it is impossible to make any specific predictions for the military munitions of the 70's. However, a few general developmental trends could be noted since ammunition weight is a limiting factor in many weapons systems. We can, therefore, expect continuing emphasis on developing light weight, caseless or combustible cased ammunition. The trend toward fully automatic fire control systems will continue. Other developments will probably take place that are beyond our imagination.

The developments of the future will bring new safety problems just as did the developments of the past. New methods will be required to control new hazards. Still, the basic safety rules for handling explosives will be as pertinent in the future as they were in the past.

Listed below are some of the basic rules for handling explosives. For the purpose of simplicity, the term explosives as used includes propellants, pyrotechnics, rockets, and other explosives ordnance devices. Try to pick out any that would have been any less important in a 14th century English gunpowder plant than they are today.

1. Expose the minimum number of persons to the minimum amount of explosives material for the shortest time allowable to maintain efficient operation.

2. All personnel selected to handle explosives should be thoroughly familiar with the items being handled.

3. All personnel handling explosives should be familiar with, understand and follow an approved standing operating procedure.

4. Explosives should not be dropped, thrown about or handled in a manner which will damage them or cause accidental initiation.

5. Explosives should not be subjected to open flame, prolonged direct sunlight, or heating equipment.

6. Explosives should be stored in containers and in areas specifically approved for that purpose.

7. Vegetation should be controlled in storage areas and around operating buildings to insure that an adequate fire break is maintained.

8. Smoking should be prohibited in buildings or areas where explosives are stored or handled.

9. Packing materials, rags and other combustible materials should not be allowed to accumulate in areas where explosives are stored or handled.

If you picked rule number 8 referring to smoking, you were correct. Smoking was not introduced or fashionable until the 16th century in England.

In all fairness, the rules selected were very general and continually apply to all explosives operations. Many problems have developed since the 14th century which require specific controls. Problems of compatibility did not develop until other explosives were discovered. Compatibility was probably recognized after the 19th century discovery of nitroglycerin, TNT and nitrocellulose.

The 20th century brought new materials and new knowledge which led to an increased awareness of the problems of toxicity in explosives operations. The cryogenic properties of some recently developed rocket fuels certainly add problems that our 14th century counterpart would not believe.

Well then, what can we expect of the future? With the current emphasis on safety from "inception to disposal", we can expect that hazards will be rapidly identified. Controls should be designed into the materials and into the handling procedures. It should be the responsibility of all personnel who come in contact with explosives to understand what they are handling and how to handle it no matter what is developed.

Aberdeen Proving Ground's Safety Supplement

****

DYE MIXTURE PRODUCES SMALL BOMB

Marco Petronio
Chief, Fluids and Lubricants Branch
Frankford Arsenal

A chemist who was trying to prepare a colored (blue) solution of calcium hypochlorite, $Ca(ClO)_2$, was successful in finding a dye (copper phthalocyanine) that was stable for several days in an aqueous solution of the hypochlorite. He then attempted to prepare a solid mixture of the hypochlorite and about 4 per cent of the dye.

He placed the mixture in a 2-ounce glass bottle with a screw cap. About 30 or 40 minutes later the bottle, which was sitting at the edge of his laboratory table, exploded with a loud report. Flying hot glass particles set afire the clothes of the chemist who was standing close by.

It was summer (August 1969) and the chemist had on a polyester blend suit. As the suit burned, it melted. Two laboratory assistants who were standing nearby attempted to pull off the burning clothing, but the cloth just stretched like burning rubber and laid against the skin. The chemist sustained mostly second degree burns with small areas classified as third degree. Tissue damage was sustained from probing for glass particles which had penetrated into the skin.

Understandably, the chemist had thought that since the dye was stable in the aqueous solution, it would be equally stable in the solid mixture. It surely was not.

The chemist was lucky that he had assistance in the laboratory at the time of the accident. He was fortunate also to have this occur while he was still in the laboratory. A short time later, he might have had the bottle in his pocket while walking in the street or while driving his car.

This accident did not occur in an Army Materiel Command laboratory, but there are several lessons that may be learned:

1. The chemist should wear protective clothing at all times while in the laboratory.

2. The need to be in the company of someone else while working in the laboratory is of paramount importance.

3. The path of a chemist's experimental work is sometimes hazardous or unknowingly treacherous.

4. Caution must be exercised at all times, and especially when the chemical is of unknown or unfamiliar materials.

****

WHAT'S YOUR ATTITUDE?

People have attitudes toward almost everything - people, things, situations, ideas and activities. So it is no surprise that they have attitudes about safety or safety performance on their jobs. Unfortunately, attitudes are not always those that lead to safe job performance. What people do in any situation depends on their attitude. The right safety attitude is positive; that is, it makes a man act safely.

Let's take a look at some work situations to show the importance of a positive safety attitude. Suppose an employee is doing a particular job and finds out he does not have the correct tool for the next step of the job. He has two choices: (1) He can get the correct tool; or (2) he can use any other tool he has at hand. The employee with a positive safety attitude will get the right tool. Or, another employee's job requires him to work above floor level. Again he has two choices: (1) He can use a proper ladder; or (2) he can stand on a nearby pipe. The man with a positive safety attitude will use a ladder to provide a safer place from which to work.

The same thing applies off the job: A person with a positive safety attitude will use his automobile seat belt; one with a negative attitude won't bother.

Strongly fixed attitudes are hard to change, but it can be done. Probably the most effective way to change attitudes is having the man in charge of the work setting the right example. He proves he wants a safe operation not only in what he says, but more importantly, in what he does. This means abiding by all safety rules and safe practices, always wearing hard hats and other personal protective equipment, and, particularly, accepting supervisory safety responsibilities with enthusiasm. Your men will not accept their responsibilities unless you accept yours.

Safety Letter - Louisville District, Corps of Engineers, U. S. Army

AMC PLANT OPERATOR BREAKS A BEST INDUSTRY WORLD RECORD

The Remington Arms Company, Inc., contractor operator of the Lake City Army Ammunition Plant, recently broke its own world's record for no-injury operations in the sheet metal products industry. The old record, as published in the National Safety Council's Accident Facts, was 19,815,543 continuous man-hours worked without a disabling injury. This record had been completed September 13, 1960, and the exposure was accumulated over a five and three-fourths years period.

The new record was completed late in 1969. As of midnight, 5 December 1969, the number of safe hours reached a total of 19,837,015. In photo at right a sign claiming a new world's record is held by Lucy Hutcherson, hand-loader in ballistics, representing the plant's employees.

The new record continued to grow until 11 December 1969, when it was terminated by a disabling injury. By that time Remington Arms Co., Inc. employees had worked 20,323,543 man-hours before recording a disabling injury. Their record had been started on 14 August 1968.

The much smaller Lake City Army Ammunition Plant staff of Active Army and Army Civilian personnel gave enthusiastic support to the installation safety effort. While the contractor's employees were achieving their record Army personnel worked an additional 219,577 man-hours without a disabling injury. Added to the Remington Arms Co., Inc. figure, this brought the Lake City Army Ammunition Plant record to 20,543,120 man-hours worked between disabling injuries.

The 14 August 1968 to 11 December 1969 injury-free record attracted attention long before it ended. One aspect of the recognition was selection of the Lake City Army Ammunition Plant for an Army Materiel Command Award of Honor for Safety for FY 1969. In photo (left)

BG Erwin M. Graham, Jr., Commanding General of the Ammunition Procurement and Supply Agency, is shown with the award plaque. With him are Frank Sovinski (left), Army Safety Officer and Robert Harlowe, Safety Supervisor at Lake City Army Ammunition Plant for the Remington Arms Co., Inc.

When last heard from, the personnel of Remington Arms Co., Inc. and the Army had begun work on a new record.

****

JUST A MINUTE

(By Charles M. Cutshaw)

Why the hurry on the highway?
Why the racing at top speed?
Just to gain a precious minute
That you'll probably never need.

Never will you dim your headlights,
I have met you times untold.
Slide your wheels up to a crossing
Trusting that your brakes will hold

Tailgate all the cars before you,
Laughing in demented glee,
At the fear of other drivers
Trying to avoid your spree.

Driving like a low grade moron
Seems to be your worthless aim.
Disregarding other folks who
Want no part of such a game.

Death is always all around you,
Laughing at the chance you take.
Knowing that someday you'll find
A curve that you will fail to make.

They will kill and maim as you did
In their minute saving strife.
They too will have gained a minute,
But they, too, will lose their life.

MOBILITY EQUIPMENT COMMAND PROMOTES OFF-POST FIRE PREVENTION

Conventional observances of Fire Prevention Week frequently provide fire-fighting demonstrations, lectures and distribution of printed materials. The US Army Mobility Equipment Command took a practical step to secure individual participation during its last Fire Prevention Week. Through co-sponsorship of the Safety Office and the Civilian Welfare Council arrangements were made for MECOM personnel to buy fire extinguishers at a greatly reduced cost. The bargain offer was accepted by 824 individuals. In the photo above COL T. K. Fullerton, Deputy Commander, is shown taking delivery of his extinguisher from Sharon Cash, Miss MECOM. At the left are Frank Orris, Chairman of the Civilian Welfare Council, and Leo R. Gegg, Fire Marshal.

****

DEFENSIVE DRIVING COURSES REQUIRED AT SHARPE ARMY DEPOT

The Sharpe Army Depot has started a series of classes in the National Defensive Driving Course. Successful completion of the 8-hour course is mandatory for all military and civilians before they can be issued a permit for operation of a government vehicle, reports Don Thompson, coordinator of the program.

COL Morris Lent, Deputy Commander, presents a certificate to safe driver Nita Anderberg.

Operators currently holding a permit are required to complete the course prior to renewal of their permit.

The program is designed to prevent traffic accidents by making available a standard course which includes information on better driving habits, awareness of preventability of accidents, principles of defensive driving, prevention of pedestrian and bicycle accidents, effects of alcohol and drugs on driving, backing, fixed objects, and grade crossing accidents.

Visual aids are being used in the classroom instruction to demonstrate preventable accidents.

Instructors are offering the course to all licensed military and civilian drivers who reside or work on Sharpe Army Depot.

****

TOOELE ARMY DEPOT WINS TWELFTH NSC AWARD OF ARMY HONOR

Tooele Army Depot recently received its twelfth National Safety Council Award of Honor. The latest award, received late in January, was for working 126 days, or 3,265,355 man-hours without a lost time accident. Shown at right with Tooele Army Depot's newest NSC Award plaque are Lyle Colbath, long-time Safety Director, and COL Anthony F. Daskevich, Commanding Officer.

****

PENNSYLVANIA RECOGNIZES NEW CUMBERLAND ARMY DEPOT TRAFFIC SAFETY PROGRAM

COL Thomas B. Mahone, Jr., Commanding Officer, New Cumberland Army Depot, receives the Governor's Traffic Safety Award from representatives of the Commonwealth of Pennsylvania. The award was presented by the Honorable Warner M. Depuy, Secretary of Revenue. Looking on is Mr. Harry H. Brainard, Commissioner, Bureau of Traffic Safety and Mr. Norman Smith, Safety Director, New Cumberland Army Depot.

ROCK ISLAND ARSENAL WAS WINNER OF FY 1969 AMC AWARD OF MERIT

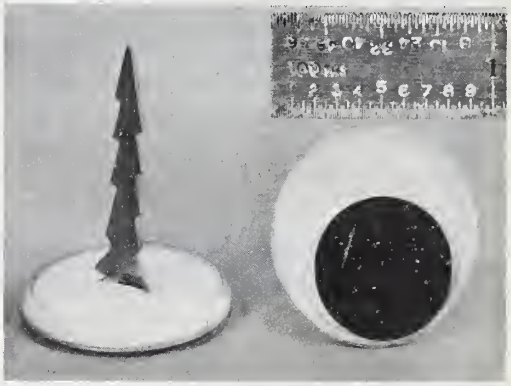
Rock Island Arsenal was the winner of an AMC Award of Merit for FY 1969. In the photo at left COL J. J. Albertson (right), Commanding Officer, is shown accepting the award certificate from US Army Weapons Command Chief of Staff COL R. W. Schafer. The Rock Island Arsenal safety director is John Le Fever.

****

THIS EYE WAS DANGEROUS

The article, "Toys for Your Children", in the November 1969 Safety Digest called attention to the fact that some toys may be hazardous playthings. Since the story appeared Ralph Coffman of Aberdeen Proving Ground has furnished the photo to the right. The two dangerous devices are eyes taken from a toy has grandchild received as a gift. You can imagine the damage they might do in the hands of a small child!

Have you examined your children's toys?



****

BRAKE SETTING

☛ Do you know how to set your emergency brake properly?

Did you know that when you do not have the service (foot) brake on at the same time as you set the emergency or parking brake, that the parking brake is not set properly?

When the service brake is not on, setting the parking brake only brings the bottom of the brake shoe into contact with the drums on the rear wheels. The entire shoes are not fully engaged, permitting the car to roll away more easily, especially backwards.

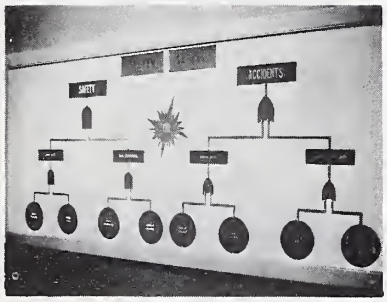
The remedy, of course, is to hold on the foot brake hand while also setting hard the emergency, or parking brake.

In parking on slopes, of course, wheels should also be cut toward the curb, chocks used if carried, and special attention given to the braking procedure above.

NSC Public Employee Newsletter

****

PUT YOUR CHART ON THE WALL



Are you looking for something different for your bulletin boards? Try turning one of them into a flow chart. The photo above suggests the striking effect a chart may produce on a 4' X 12 1/3' board. The board is too large for many of the words to be read.

The stylized bullets and arrows on the second and fourth lines are fault tree symbols. The bullet represents an "and gate" and the arrow an "or gate". Fault tree analysis is an advanced technique used in system safety.

Passers-by with no knowledge whatever of system safety stopped to read the bulletin board.

Here are ten questions that will test your knowledge of safety requirements that you will need under different circumstances. The answers to all of them may be found in AMCR 385-224. How many can you answer without referring to the regulation?

1. Where should you expect to see a posted DA Lable 85?

   Answer and reference:

2. What should be done if doubt exists concerning the explosive nature of explosive material obtained from salvage operations or which has lost its identification markings?

   Answer and reference:

3. What should be done prior to processing wet or lumpy explosives that cannot be screened to remove extraneous material?

   Answer and reference:

4. What lightning protection systems are approved for use within Army Materiel Command installations?

   Answer and reference:

5. How near may a burning ground be located in inhabited buildings, public highways and railroads?

   Answer and reference:

6. Must any particular type of fire hose be permanently connected to a fire hydrant in a location where it is permissible for operating personnel to attach a fire?

   Answer and reference:

7. If a small quantity of hydrofluoric acid remains in its shipping container, can it safely be transferred into glass bottles for storage until needed?

   Answer and reference:

8. What distinction can be made between the terms dust-proof and dusttight?

   Answer and reference:

9. Is the generation of static electricity a hazard?

   Answer and reference:

10. If a small quantity of an oxidizing agent is spilled during processing, may an attempt be made to salvage it?

    Answer and reference:

****

REFERENCE PUBLICATIONS

DA Circular 385-24, 30 January 1970, Safety, Safe Operation of Truck, Utility, 1/4 Ton, 4X4 M151 Series.

AMC Supplement 1 to AR 385-40, 27 March 1970, Safety, Accident Reporting and Records.

AR 385-10, 17 February 1970, Safety, Army Safety Program

COMMENDATION CERTIFICATE DISPLAYED AT NEW CUMBERLAND ARMY DEPOT

An AMC Commendation Certificate for achievement of an outstanding safety program is hung on the display board of the New Cumberland Army Depot by Ernest E. Writer, a fork lift operator with the Directorate for Distribution and Transportation. Watching are COL Thomas B. Mahone, Jr., Commanding Officer, and Normal Smith, Safety Director.

The depot's 3,300 civilian employees accumulated almost 5,000,000 man-hours without a disabling injury. Mr. Writer, who accepted the award in behalf of the depot employees, has one of the best safety records at the installation. He has experienced only one minor on-the-job injury in 26 years and has accumulated over 2,400 hours of unused sick leave.

****

AMC DEPOTS WIN NSC SAFETY AWARDS

New Cumberland Army Depot has been notified that a NSC Award of Honor will be forwarded in recognition of this Depot operating 4,515,543 man-hours without a disabling injury from 7 March 1969 to 31 December 1969.

Sacramento Army Depot has also won a NSC Award of Honor. Personnel of the Depot operated 3,447,111 man-hours without a disabling injury from 30 July 1969 to 27 January 1970.

Here are the answers to the questions on pages 42 and 43. All questions were based on information contained in AMCR 385-224. A reference to the pertinent paragraph follows each answer.

1. Magazine placards, DA Label 85, must be posted at or near each magazine door so that the instruction printed on them are visible when work is being done in the magazine. Reference: Paragraph 1806a.

2. Explosive material or items which cannot be definitely identified as to their explosive nature should be disposed of by technically trained personnel in accordance with paragraph 2708. Reference: Paragraph 2002b.

3. Wet or lumpy explosives that cannot be screened shall be visually inspected. (Bulk high explosives, in granular or flake form, intended for processing, shall be passed through a screen to remove extraneous material prior to use.) Reference: Paragraph 2602a.

4. The lightning protection systems approved for use at AMC installations are the integrally mounted system, the separately mounted shielding system (mast type), and the separately mounted shielding system (overhead ground wire). Reference: Paragraph 802.

5. A site selected for the destruction of explosives and ammunition shall be located at the maximum practicable distance available from all magazines, inhabited buildings, public highways, railways and operating buildings. The separation shall not be less than 2,400 feet unless pits or similar aids are used to limit the range of fragments, in which case the appropriate missile distance will apply. Reference: Paragraph 2709.

6. Standard 2 1/2- or 1 1/2-inch single jacketed hose, as required, should be permanently connected to hydrants in those locations where it is permissible and necessary for operating personnel to attack a fire or act to prevent its spread. Reference: Paragraph 1227.

7. No. Hydrofluoric acid and its vapor are very corrosive to many substances, especially glass. It is shipped and stored in lead carboys, rubber drums or wax bottles. Reference: Paragraph 1305.

8. Dustproof means so constructed or protected that an accumulation of dust will not interfere with successful operation. Dusttight means so constructed that dust will not enter the enclosing case. Reference: Paragraphs 603a and b.

9. The generation of static electricity is not of itself a hazard. the hazard arises when static is allowed to accumulate, for subsequently it may discharge as a spark across an air gap in the presence of highly flammable material and thus provide a source of ignition. Reference: Paragraph 701.

10. Spills of small quantities of oxidizing agents during processing shall not be salvaged. Such spills must be cleaned up immediately. If large quantities are spilled, the uppermost layers may be salvaged if there has been no opportunity for these to have become contaminated. Reference: Paragraph 1311f.

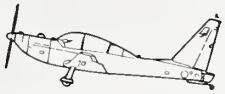
****

DESIGNATION OF ARMY AIRCRAFT

HELICOPTER SERIES

DESIGNATION	ENGINE	POPULAR NAME
AH-1G	T53-L-13/A/B	COBRA
TH-1G	T53-L-13/A/B	
UH-1A	T53-L-1A	IROQUOIS
UH-1B	T53-L-9A,11/B/C/0	
UH-1C	T53-L-11/B/C/0	
UH-1O	T53-L-9A,11/B/C/0	
UH-1H	T53-L-13/A/B	
UH-1M	T53-L-13/A/B	
OH-6A	T63-A-5A	CAYUSE
		
OH-13E	O-335-5D	SIOUX
OH-13G	O-335-5D	
OH-13H	O-435-23C	
OH-13K	6VS-335A	
OH-13S	O-435-25A	
TH-13T	O-435-25A	
UH-19C	R-1340-57	CHICKASAW
UH-19D	R-1300-3D	
OH-23B	O-335-5O	RAVEN
OH-23C	O-335-5D	
OH-23O	O-435-23C	
OH-23F	O-540-9A	
OH-23G	O-540-9A	
CH-34C	R-1820-84C	CHOCTAW
VH-34C	R-1820-84D	
CH-37B	R- 2800-54	MOJAVE
		
CH-47A	T-55-L-5,7	CHINOOK
CH-47B	T55-L-7/B/C	
CH-47C	T55-L-7C,11	
CH-54A	T73-P-1	TARHE
CH-54B	T73-P-700	
TH-55A	H10-360B1A	OSAGE
		
AH-56A	T64-GE-16	CHEYENNE
		
OH-58A	T63-A-700	KIOWA
		

OBSERVATION SERIES

DESIGNATION	ENGINE	POPULAR NAME
O-1A	O-470-11B	BIRD DOG
O-1O	O-470-15	
O-1E	O-470-11B	
O-1G	O-470-11B	
TO-1A	O-470-11B	
TO-1E	O-470-11B	
YO-3A	10-360-D	

VTOL AND STOL SERIES

OV-1A	T53-L-7,7A	MOHAWK
OV-1B	T53-L-7,7A	
OV-1C	T53-L-7,7A,15	
OV-1D	T53-L-701	

UTILITY SERIES

U-1A	R-1340-61	OTTER
RU-1A	R-1340-61	
U-6A	R-985-AN-39/A	BEAVER
RU-6A	R-985-AN-39/A	
U-8D	O-480-1A,1B	SEMINOLE
RU-8D	O-480-1A,1B	
U-8F	O-480-3,3A	
U-8G	O-480-1A,1B	
U-9B	GO-480-G1B6	AERO COMMANDER
U-9C	GSO-480-B1A6	
RU-9O	GSO-480-B1A6	
YU-9	GO-435-C2B1	
U-10A	GO-480-G1D6	COURIER
		
U-21A	T74-CP-700	UTE
RU-21A	T74-CP-700	
RU-21B	T74-CP-702	
RU-21C	T74-CP-702	
RU-21O	T74-CP-700	
RU-21E	T74-CP-700	

TRAINER SERIES

T-41B	10-360-O	MESCALERO
		
T-42A	10-470-L	COCHISE
		

PREPARED BY:
U.S. ARMY AVIATION SYSTEMS COMMAND
ST. LOUIS, MO. 63166 (AMSAV-R-EOR)
FOR ADDITIONAL COPIES, ADDRESS (AMSAV-R-MCA)

DATED: 1 MARCH 1970
(EDITION OF 7 MARCH 1968 CAN BE USED)

UNITED STATES ARMY MATERIEL COMMAND
WASHINGTON, D.C. 20315